Cabezon (*Scorpaenichthys marmoratus*)

Status of the Population:

Limited information is available on population biology or changes in biomass over time (Leet et al. 2001); this is considered a data-poor situation. Recent increases in commercial fishing pressure on cabezon have intensified efforts to learn more about their life history characteristics, population biology, and to assess stock size. As a primarily recreational fishery for many years, catches from the CPFV fishery from 1947 to 1980 indicate that catches of cabezon were declining (Leet et al. 2001). Recreational landings have further declined concurrent with the increase in commercial fishing efforts and reported commercial landings. As fishing effort increases, it is likely that populations living in heavily utilized areas will decline further (Leet et al. 2001). Furthermore, as one of the nest-guarding species, cabezon are particularly vulnerable to spear divers and fishermen alike.

Home Range/Migratory Patterns:

Although not known, it is likely cabezon are residential and non-migratory. Cabezon normally occur nearshore, except as larvae. As fish get older, and larger they tend to migrate to deeper water. In shallower water, they migrate in and out with the tide to feed. Many California sculpin (Family Cottidae) species are highly territorial, which suggests cabezon may also be.

Current Regulations:

Commercial fishermen must possess a nearshore finfish permit to take cabezon. The minimum size limit is 15 inches total length. The commercial take of cabezon is prohibited from Thursday through Sunday, inclusive. Cabezon may not be taken commercially north of Point Conception to 40 degrees, 10 minutes north latitude (near Cape Mendocino) in March and April. They also may not be taken commercially south of Point Conception to the Mexican border during January and February.

The recreational minimum size limit is 15 inches total length. Recreational fishermen may possess no more than 10 cabezon.

Cabezon may not be taken in waters equal to or greater than 20 fathoms in the Cowcod Conservation Areas.

The Commission has established a combined recreational and commercial Optimum Yield for cabezon at 50 percent of recent catches as an interim precautionary measure because of the current data poor status of cabezon and to

provide protection against overfishing. The Optimum Yield was set at 178,000 pounds for total allowable catches, with 84,000 pounds allocated to the recreational fishery and 94,000 pounds allocated to the commercial fishery. Cabezon is included in the Nearshore Fishery Management Plan.

How MPAs May Help:

Benefits most likely to accrue to cabezon are protection of a portion of the stock from localized depletion, protection of a portion of the available spawning biomass, protection of nest-guarding males and nests, and contribution to neighboring fished areas from the "export" of juveniles and to more remote areas via the transport of larvae. These benefits can best be realized when MPA sizes are commensurate with the movement patterns of cabezon. If the MPA is not large enough to protect some individuals completely then the chances of success are greatly diminished. Additionally, if MPAs are so far apart that larval transport does not result in larvae being deposited inside closed areas, there will be limited replacement of adult fish except by larval transport and movement of fish from fished areas. It is suggested that MPAs established for this species also include intertidal areas because newly settled cabezon recruit there, and larger fish often move up to feed in the intertidal. These benefits are based on the assumptions that cabezon are residential and not migratory, possess a home range comparable to other nearshore species being protected, and that their major prey items (such as crabs, lobster, and abalone) are protected as well (eg, crabs, lobster, and abalone).

Kelp Greenling (*Hexagrammos decagrammus*)

Status of the Population:

There are no estimates of abundance for kelp greenling in California. The yearly sport catch remained relatively constant during the first ten years (1980-1989) it was surveyed, but has declined steadily from 1993 to 1999 (Leet et al. 2001). Since decline in catch may be one symptom of overfishing, this could be an indication that current levels of fishing are having adverse effects on the population, although no population data are available at present to confirm this. Spear fishermen could overfish local populations, however, because they can select individual targets, and greenlings are particularly vulnerable to spears when guarding their nests. Also, although commercial catch has been traditionally very low compared to recreational catch, the increased fishing pressure in recent years by the nearshore live fish fishery could have a much broader impact on the kelp greenling population in California (Leet et al. 2001).

Home Range/Migratory Patterns:

Kelp greenling are solitary, territorial fish. Not much is known about their home range or migratory patterns.

Current Regulations:

While kelp greenling are currently listed in the Federal Groundfish Plan for Pacific coast groundfish, they are not actively managed by the Pacific Fishery Management Council and are managed instead by the state. Many of the current regulations applying to kelp greenling also include a similar species, the rock greenling (*Hexagrammos lagocephalus*).

Commercial fishermen must possess a "nearshore finfish" permit to take kelp greenling and rock greenling. The minimum size limit is 12 inches total length for greenlings. The commercial take of greenlings is prohibited from Thursday through Sunday, inclusive. Greenling may not be taken commercially north of Point Conception to 40 degrees, 10 minutes North Latitude (near Cape Mendocino) in March and April. They also may not be taken commercially south of Point Conception to the Mexican border during January and February.

The recreational minimum size limit is 12 inches total length. Recreational fishermen may possess no more than 10 kelp greenling.

Kelp and rock greenlings may not be taken in waters equal to or greater than 20 fathoms in the Cowcod Conservation Areas.

The Commission has established a combined recreational and commercial Optimum Yield for greenlings of the genus *Hexagrammos* at 50 percent of recent catches as an interim precautionary measure because of the current data poor status of greenlings and to provide protection against overfishing. The Optimum Yield was set at 39,800 pounds for total allowable catches, with 26,400 pounds allocated to the recreational fishery and 13,400 pounds allocated to the commercial fishery. Greenlings are included in the Nearshore Fishery Management Plan.

How MPAs Might Help:

There is no information specifically identifying benefits of MPAs for kelp greenling. As a solitary, territorial species, MPAs would likely protect individuals within their boundaries from take by fishing. It is expected that because of the similarities in life history between kelp greenling and cabezon that many of the same benefits which could accrue to cabezon would also apply to kelp greenling, such as potential to increase spawning biomass). It is suggested that MPAs established for this species also include intertidal areas because kelp greenling utilize intertidal as well as nearshore habitat.